

NOTES ON HAWAIIAN REPTILES FROM THE ISLAND OF MAUI.

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As there has been no report on the lizards of Maui, the following notes on specimens, collected by the author during the winter of 1899-1900, may be of interest. The names are taken from the paper on Hawaiian Land Reptiles,^a by Dr. Leonhard Stejneger, who has kindly verified my identifications. All measurements are in inches and hundredths.

The specimens are in the U. S. National Museum.

HEMIDACTYLUS GARNOTII Duméril and Bibron.

Hemidactylus garnotii STEJNEGER, Proc. U. S. Nat. Mus., XXI, 1899, p. 792.

One specimen (Cat. No. 31268 U.S.N.M.) was taken at Maalaea Landing, March 8, 1900. Colors in life: Back marked with brown, black, and white; the white in regular rows of spots from snout to near end of tail; underside of body light lemon yellow, becoming very pale, almost white on throat and chin; underside of tail salmon, darker distally.

Another specimen (Cat. No. 31267 U.S.N.M.) was taken in February from beneath loose stones on summit of a hill near Lahaina. The eggs were first found at about 1,000 feet elevation in Iao Valley, where eight were taken from beneath small stones. They are nearly spherical in shape, being thus easily distinguished from those of the skink. The pure white shell is firm and brittle and of fine texture. Six examples measure as follows:

.40 by .36	.43 by .38	.40 by .36 inches
.41 by .37	.45 by .40	.40 by .34 inches

Of seven incubated eggs taken December 27, one was found hatched on January 13, about one-third of the shell having been broken away

^a Proc. U. S. Nat. Mus., XXI, 1899, p. 783.

at one end. Color of young in life: Above, sprinkled with yellowish black and brown points, and regularly marked with white dots; on the head and body the white dots are grouped at regular intervals, forming longitudinal rows—one row in middle of back, one row on each side of that, and one on each side of body; on snout these rows become less regular. On the tail the three dorsal rows are united, forming bars, which are still evident in the preserved specimen. The lateral spots are continued on sides of tail, occurring about twice as often as the bars. Spots on the legs are yellowish and produce an irregular pattern. Below, very pale greenish yellow, colored by internal organs; a red median streak in thoracic region; darker and brownish over the intestines; underside of tail salmon pink, darker toward the tip.

A young one just hatched measures as follows:

	Inches.
Total length.....	2.14
Vent to tip of tail.....	1.10
Snout to ear.....	.30
Fore limb.....	.34
Hind limb.....	.45

The young gecko is exceedingly active and able to spring for some distance. One which I put in a water glass clung to the side, either head or tail up, and even moved backward up the side of the glass. I noticed that the long, slender tongue was often thrust out and around to angle of the mouth, the tip extending over the eye, no doubt to moisten the eyeball.

PEROPUS MUTILATUS (Wiegmann).

Peropus mutilatus STEJNEGER, Proc. U. S. Nat. Mus., XXI, 1899, p. 796.

One specimen (Cat. No. 31270 U.S.N.M.) was taken near Lahaina under stones; same locality as the specimen of *Hemidactylus*. December 27 a small specimen was taken in Iao Valley at about 1,000 feet elevation (Cat. No. 31270 U.S.N.M.).

EMOIA CYANURA (Lesson).

Emoia cyanura STEJNEGER, Proc. U. S. Nat. Mus., XXI, p. 807.

This lizard is confined to the woods of the higher hills, my specimens being taken at about 1,000 feet elevation in Iao Valley. Two specimens had their mouths packed with small insects and larvæ. One has a curious malformation of the tail; a minute sprout growing from one side midway between vent and tip of tail. There is little variation among the head shields of my twelve specimens. In one (Cat. No. 31257 U.S.N.M.) the frontal and prefrontals are united to form a single shield. In another (Cat. No. 31256 U.S.N.M.) the frontal and right prefrontal are united with but an indication of the suture.

ABLEPHARUS BONTONII PÆCILOPLEURUS (Wiegmann).

Ablepharus bontonii pæcilopleurus STEJNEGER, Proc. U. S. Nat. Mus., XXI, 1899, p. 811.

This skink was abundant near Kahului in a pit cattle guard of the Maui railroad and among the sand hills a little back from the beach. It is confined to the lowlands, never being seen near the other species here listed. In the sand hills I found it an easy matter to capture plenty of specimens. Among the rocks it was useless to bother with them. Among my specimens there is considerable variation in the head shields, and these are given in tabular form.

Normal. I have designated as normal those specimens in which the prefrontals meet in a suture between the frontal and front nasal. This is the commonest condition, although the suture may vary in length.

Variation 1. The four above-mentioned shields meet at their corners, the sutures forming a flattened X.

Variation 2. A small, triangular shield in front of frontal, the apex pointing forward.

Variation 3. A small truncated triangular shield in front of frontal, the smaller end pointing backward.

Variation 4. Among the adults there is one specimen which is normal as to the shields under consideration, but some of the small post ocular shields of the left side are united, forming a long shield which overlaps the frontoparietal to its middle and covers part of the left parietal. This specimen is listed under normal and variation 4. Among the young are two with variation 3 and the frontonasal divided bisymmetrically. These are listed under variations 3 and 4.

The following table gives the variations among 32 adults and 24 young recently from the egg.

Age.	Normal.	Variations.			
		1.	2.	3.	4.
Adults.....	22	3	6	1	1
Young.....	12	1	7	4	2
Total.....	32	4	13	5	3

While collecting specimens of this lizard in the cattle guard mentioned above, large quantities of its eggs were found deposited in damp earth. In some instances they were stuck together in bunches of four or five. One "set" consisted of over seventy eggs in all stages of incubation. From some the young escaped as I held the eggs in my hand. Dozens of empty shells were found among the good eggs. The shell is dull, dirty white, soft and leathery. In shape the eggs resemble those of hummingbirds, but may be much rounder, and others are noticeably pointed at one or both ends. One example is

lopsided, measuring 0.55 by 0.33 by 0.30. The following measurements, selected from over fifty taken in the field, show some of the variations:

0.71 by 0.37	0.57 by 0.34 inches.
.70 by .33	.56 by .37 inches.
.69 by .24	.55 by .39 inches.
.68 by .35	.49 by .30 inches.
.60 by .38	.47 by .32 inches.

It may be seen that the length varies from 0.47 to 0.71 inch, and the short diameter from 0.24 to 0.39 inch.

While fresh the eggs are pink as any dove's egg, and, as might be expected, they become dark as the embryos develop. In the older eggs there is a reduction of the difference between the two diameters, the shell is more tense and the calcareous (?) matter is distributed in stellate spots.

The young escapes through a longitudinal slit a quarter of an inch long near one end of the egg, or the slit may be across one end. Occasionally there are two convergent slits, which meet near the end of the egg, forming a flap. The embryo lies in the shell with the body and tail coiled in snail fashion, the yolk being at the head end. Within 10 to 20 seconds after the envelope cracks the young lizard is out and away, being able to take care of himself at once. The following measurements are of a just-hatched young:

	Inches.
Total length	1.80
Vent to tip of tail.....	1.00
Snout to ear.....	.24
Fore limb.....	.30
Hind limb.....	.36

A few fresh eggs taken December 19 and kept on shipboard, resting on damp earth, hatched January 30. The head shields of the embryos show the same variations as the adults.